

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

REC'D 06 APR 2005

WIPO PCT

PCT

To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/IB2005/050239

International filing date (day/month/year)
20.01.2005

Priority date (day/month/year)
23.01.2004

International Patent Classification (IPC) or both national classification and IPC
H04N3/15

Applicant
KONINKLIJKE PHILIPS ELECTRONICS N.V.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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Authorized Officer

Wahba, A

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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/B2005/050239

Box No. 1 Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material:
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing:
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/B2005/050239

**Box No. V Reasoned statement under Rule 43*b/s*.1(a)(i) with regard to novelty, inventive step or
Industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	2-13,16-19
	No: Claims	1,14,15
Inventive step (IS)	Yes: Claims	
	No: Claims	1-19
Industrial applicability (IA)	Yes: Claims	1-19
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V.

- 1 Reference is made to the following document:

D1 : US 6 538 245 B1 (KOZLOWSKI LESTER J) 25 March 2003 (2003-03-25)

2 **INDEPENDENT CLAIM 1**

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.

an image sensor comprising a plurality of pixels, each pixel comprising (D1: col.1, l.8-12):

a light sensor element, a sensor voltage across the element varying depending on the light incident on the element (D1: fig. 1, PD1);

a voltage amplifier having gain magnitude greater than 1 (D1: fig.1, M6; implicit);
and

a sampling capacitor charged by the voltage amplifier (D1: Cint),

wherein the voltage amplifier comprises first (D1: fig.1, M6) and second transistors (D1: fig.1, Cint) in series, the input to the voltage amplifier being provided to the gate of the first transistor, and the output being defined by the junction between the first and second transistors,

and wherein each pixel further comprises a third transistor (D1: fig.1, M4), the gate of the third transistor being connected to one terminal of the light sensor element, and the source to the third transistor being connected to the gate of the first transistor (D1: fig.1).

All features of claim 1 are known from D1 and therefore not new in the sense of Article 33(2) PCT.

3 **INDEPENDENT CLAIM 14**

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 14 is not new in the sense of Article 33(2) PCT. Document D1 discloses (the references in parentheses applying to this document):

a method of measuring light intensity of an image to be detected using a plurality of light sensor elements each forming a pixel of an image sensor, a sensor voltage across the elements varying depending on the light incident on the elements, the method comprising:

providing the sensor voltage to an in-pixel voltage amplifier through a source follower buffer transistor (D1: fig.1; M4; col.5, l.30);

amplifying the voltage provided by the source-follower buffer transistor using the in-pixel voltage amplifier having a gain magnitude greater than 1 (D1: implicit);

charging a sampling capacitor with the amplified voltage and measuring the flow of charge required to charge the sampling capacitor (D1: implicit see §2).

4 DEPENDENT CLAIMS 2-13, 15-19

Dependent claims 2-13, 15-19 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step (Article 33(2) and (3) PCT).

Claims 2, 11 to 13 and 15 are either known from D1 or are commonly known circuit arrangements.

Claims 3 to 10 and 16 to 19 refer to a choice of parameters that are normal design options to a skilled person in the art.



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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/B2005/050239

Box No. I Basis of the opinion

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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/IB2005/050239

**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or
industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	2-13,16-19
	No: Claims	1,14,15
Inventive step (IS)	Yes: Claims	
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and wherein each pixel further comprises a third transistor (D1: fig.1, M4), the gate of the third transistor being connected to one terminal of the light sensor element, and the source to the third transistor being connected to the gate of the first transistor (D1: fig.1).

All features of claim 1 are known from D1 and therefore not new in the sense of Article 33(2) PCT.

3 **INDEPENDENT CLAIM 14**

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 14 is not new in the sense of Article 33(2) PCT. Document D1 discloses (the references in parentheses applying to this document):

a method of measuring light intensity of an image to be detected using a plurality of light sensor elements each forming a pixel of an image sensor, a sensor voltage across the elements varying depending on the light incident on the elements, the method comprising:

providing the sensor voltage to an in-pixel voltage amplifier through a source follower buffer transistor (D1: fig.1; M4; col.5, l.30);

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